

College and Career Readiness and the Next Generation Science Standards (NGSS)

A Framework for K-12 Science Education, developed by the National Research Council (NRC), focuses on the integration of Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas that together constitute rigorous scientific literacy for all students. During the development of the standards, the Lead States and NGSS writing team will review and revise as necessary in order to validate the NGSS for college and career readiness by engaging postsecondary science faculty in two- and four- year colleges and in technical training programs leading to industry recognized credentials in the twenty-six states participating in this project. The general process is outlined in the following section.

Validation Process

Step 1 – Review of Existing Research

The most current research regarding college and career readiness is being reviewed and will be used as a basis for the validation process. Research in regard to science readiness is limited; however a foundation upon which to base this discussion exists in the white papers that have been commissioned to review existing literature regarding the skills and knowledge that best support success in entry level college courses. These will be available during the validation process and for public use.

Initial findings show students should have knowledge of the overarching ideas in the science disciplines (e.g., chemistry, physics, earth science, etc.) and how the practices of science are situated within this content. Students are challenged to apply and build on their current knowledge and understanding and make connections to new science content and to life outside of the classroom. Students should also have a rich understanding of the nature and epistemology of science, scientific discourse, and the integration of science, technology, and society. Policy history and recommendations thus far suggest that to ensure the findings are realized, policymakers must hold students to an equitable outcome and provide students with a coherent pathway of science education from K-12.^{1,2}

Step 2 – NGSS College and Career Readiness Lead State Partner Review

Teams from the Lead State Partners will convene to review college and career readiness in the NGSS. These teams will include high school curriculum specialists and post-secondary science faculty who teach entry level courses in two- and four- year colleges and in technical training

¹ACT. (2010). *Science for College and Careers: A Resource for Developers of the Next Generation Science Standards*. Unpublished manuscript, Commissioned by Achieve.

² College Board. (2010). *College readiness and science*. Unpublished manuscript, Commissioned by Achieve.

programs leading to industry recognized credentials in STEM fields. During these meetings, the teams will:

- Review the draft secondary level NGSS high school standards
- Bring and review examples of student assignments and work in entry level science courses and identify the core concepts and skills necessary to do that work
- Validate and/or identify changes that may be needed in the draft science standards

Step 3 – NGSS College and Career Readiness Extended Higher Education Review

The NGSS team will work with national organizations of higher education faculty in each of the science domains and in STEM Networks in the states to identify a group of faculty from both two- and four-year institutions who teach entry level science courses. The findings from the Lead State Partner Review and associated research will be shared with this group as they go through a similar process to validate and/or identify changes that may be needed in the draft science standards.

Step 4 –NGSS Revision

The results from the three steps above will be summarized and shared with the Lead States and the writing team to make appropriate changes in the draft standards.